

ULTRA-FIN™

Radiant Floor Heating System

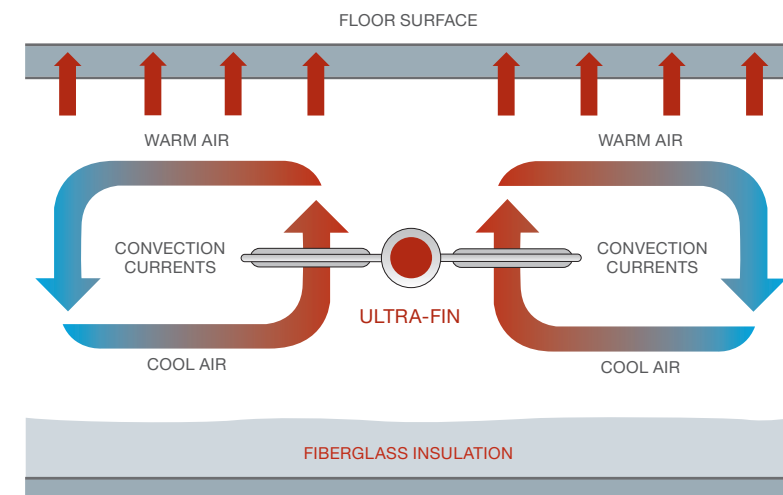
ULTRA-FIN: RADIANT HEATING

Welcome to Ultra-Fin

Ultra-Fin is the leader in cost efficient and high comfort radiant floor heating. Ultra-Fin is a hydronic system designed specifically for wood-frame housing that is simple to install, and is compatible with all floor coverings including carpet, tile, slate and hardwood.

How Ultra-Fin Works

The Ultra-fin system uses tubing to circulate hot water through the under-floor joist spaces, where heat is conducted to louvered aluminum Ultra-Fins attached to the tubing. The Ultra-Fins radiate the heat and warm the air in the joist spaces, creating hot air convection. The heated air warms the floor uniformly and the floor radiates gentle heat throughout the living space above.



The science behind the Ultra-Fin™ system

What Makes Ultra-Fin Different?

Traditional radiant floor systems are based on heat contact transfer technology where hot water tubing makes direct contact with floor layers. Compared to Ultra-Fin, these systems are overly complicated, time-consuming to install, provide lethargic heat response, and require complicated construction measures such as extra floor layers or concrete.

Ultra-Fin creates new efficiency by generating hot air convection inside regular wood-frame floor systems. By converting the entire floor system into a giant heat radiator, Ultra-Fin generates uniform warmth and comfort at unprecedented cost savings and convenience.

GREAT PERFORMANCE WITH SIMPLE INSTALLATION

1. TUBING INSTALATION

When you install Ultra-Fin, you start by installing the tubing. You can either run the tubing **parallel** to the joists using *SnakeHangers™* or you can drill the joists and run the tubing **through** the holes.

HANGING



DRILLING



OPERATING WATER TEMPERATURE
100 °F - 180 °F

2. ATTACH THE ULTRA-FINS

You attach the aluminum Ultra-Fins by lapping two fins over a section of tubing, then inserting two **TurnKeys** and giving them a 90-degree turn.

3. READY FOR INSULATION

Simply connect your tubing to the supply and return manifold, and you're ready to insulate the system. Yes, it's just that easy!

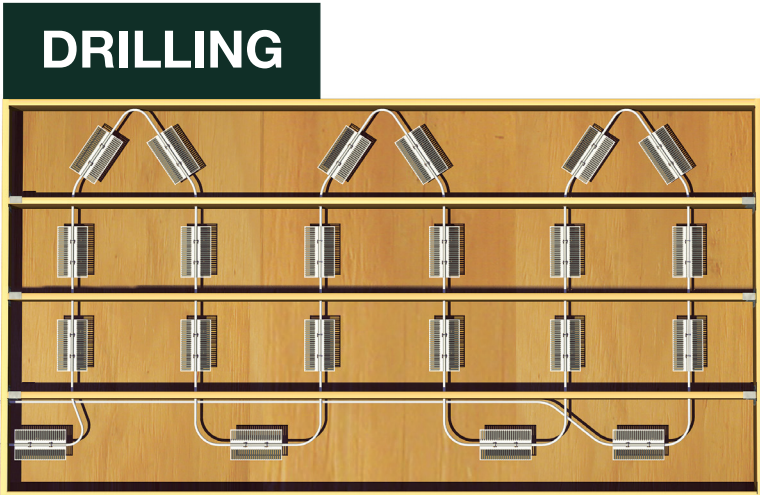
ULTRA-FIN MODULATING 100°-150°F

If you plan to use a modulating boiler, your system will need a few more Ultra-Fins to distribute the heat with the lower operating temperature. Depending on your joist spacing, you will typically need Ultra-Fins installed at 18" centers.



Tubing parallel to joists

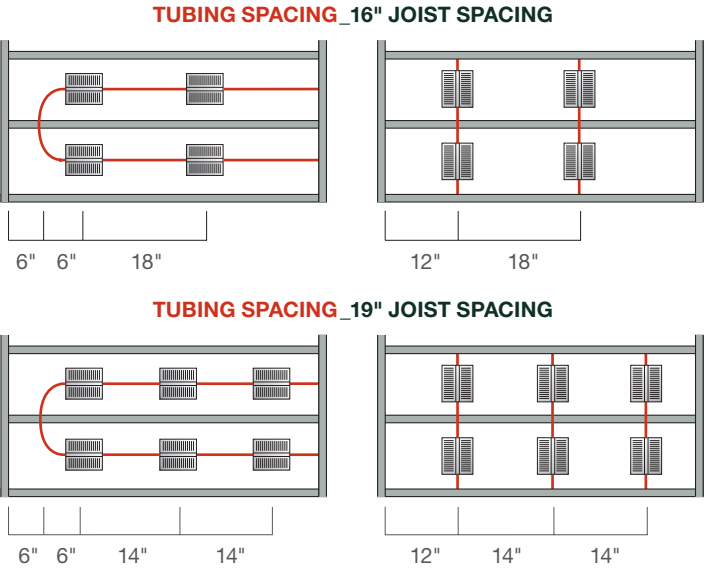
18"



Tubing through joists

18"

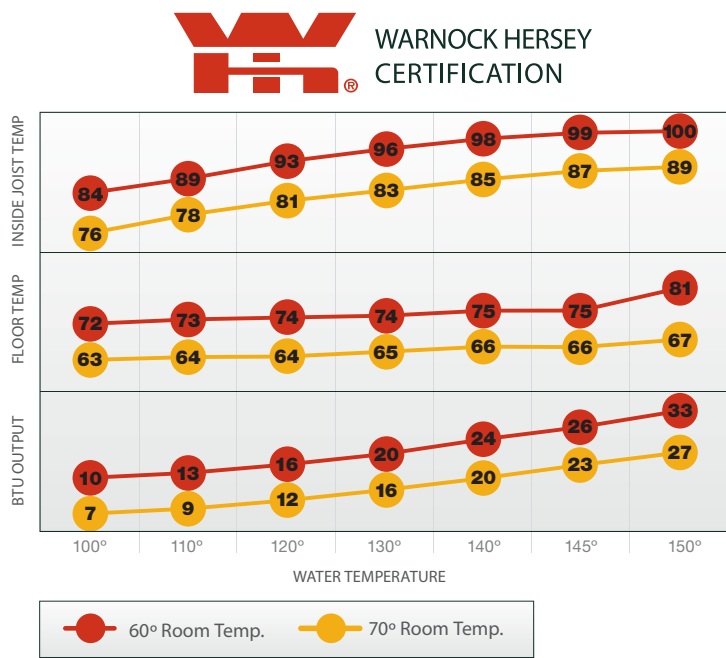
Sample Layouts: Ultra-Fin
MODULATING 100°-150°F



QUICK-CALC for Ultra-Fin MODULATING:

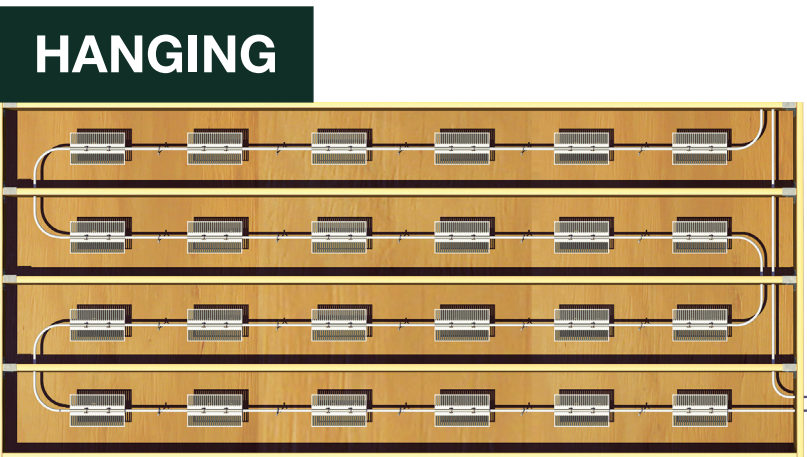
Hanging	Drilling
Sq Ft ÷ 1.3 = Tubing	Sq Ft ÷ 1.5 = Tubing
Sq Ft ÷ 2.6 = Fin Pairs	Sq Ft ÷ 2.6 = Fin Pairs

Maximum tubing length is 300 ft.



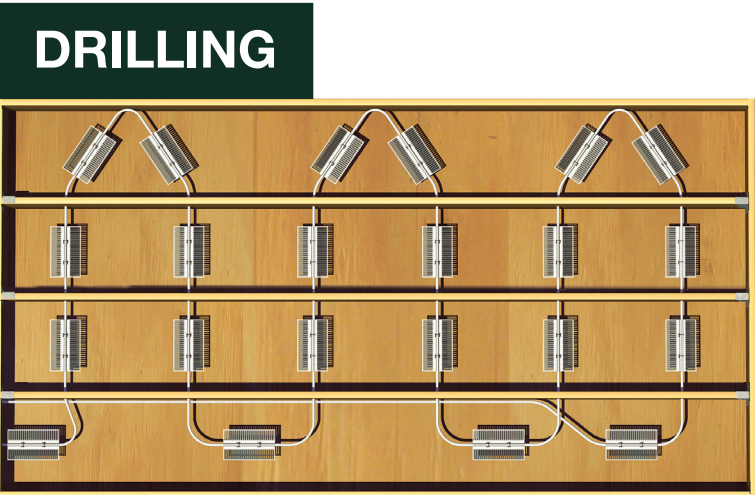
ULTRA-FIN HIGH TEMP 150°-180°F

If you plan to use a high temperature boiler, you want to design your system according to **Ultra-Fin High Temp**. Depending on your joist spacing you will typically need Ultra-Fin's installed at 24" centers.



Tubing parallel to joists

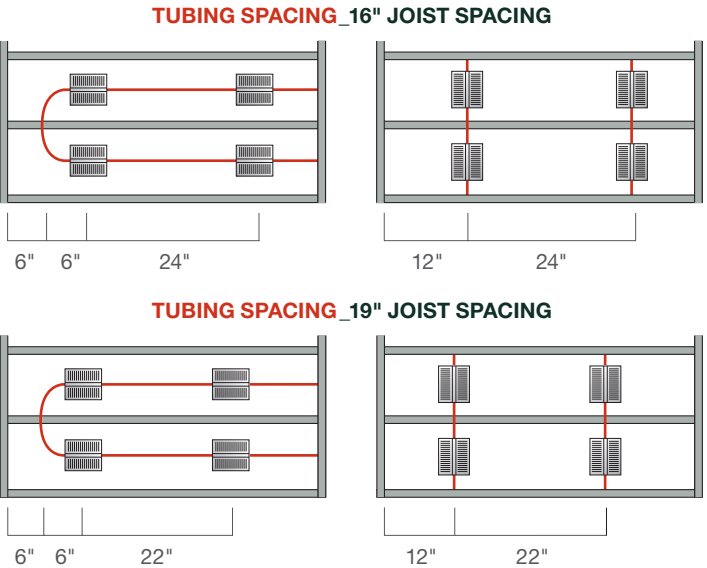
24"



Tubing through joists

24"

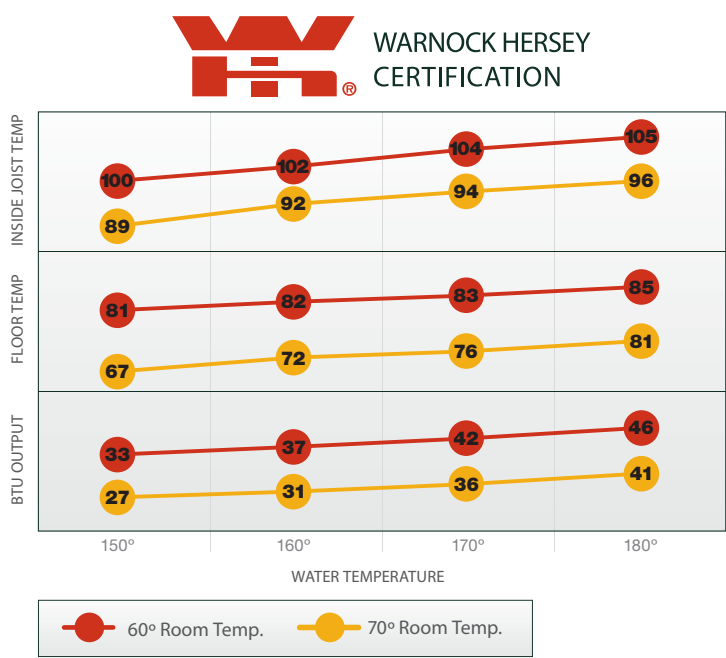
Sample Layouts: Ultra-Fin
HIGH TEMP 150°-180°F



QUICK-CALC for Ultra-Fin HIGH TEMP:

Hanging	Drilling
Sq Ft ÷ 1.3 = Tubing	Sq Ft ÷ 2 = Tubing
Sq Ft ÷ 3.0 = Fin Pairs	Sq Ft ÷ 3 = Fin Pairs

Maximum tubing length is 300 ft.



ULTRA-FIN WORKS GREAT
WITH HARDWOOD FLOORS!

One of Ultra-Fin's most popular features is its compatibility with hardwood floors. However, any hardwood floor can suffer shrinkage or other damage if it is not installed correctly. Make sure your flooring installer follows the manufacturer's instructions for your hardwood product, and review the checklist below.

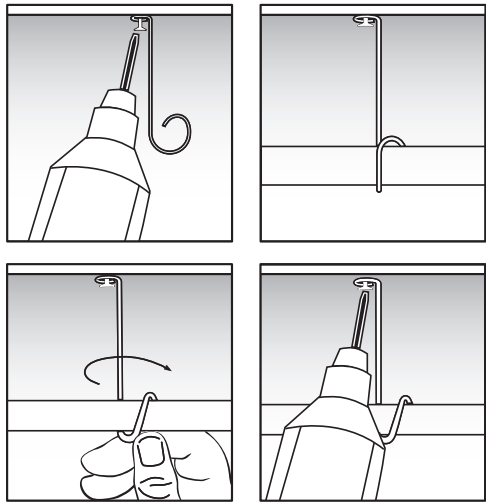
- Hardwood Checklist**
- Hardwood reacts to relative changes in humidity by expanding and shrinking. To maintain the integrity of your hardwood floor, here are some of the steps to consider in your floor installation:
- ✓ Before your hardwood floors are installed, make sure that all plastering and concrete work is completely dry.
 - ✓ Make sure the home heating system is operating.
 - ✓ Make sure the home has been heated at 72° F (22° C) for at least five days before flooring delivery.
 - ✓ Allow concrete to cure for a minimum of 30 days before hardwood floors are installed.
 - ✓ Climatize flooring materials at room temperature for at least 10 - 14 days prior to installation.
 - ✓ Use a moisture meter to measure the moisture content in the sub floor. Moisture content should be between 6% and 12%. If the moisture content exceeds 12%, turn up the heat and open the basement windows ½".
 - ✓ Use a moisture meter to measure the moisture content of the hardwood flooring to be installed. For flooring less that 3" wide, the difference in humidity between the sub floor and the hardwood must be less than 4%. For flooring greater than 3" wide, the difference in humidity between the sub floor and the hardwood must be less than 2%.

+ NOTE +
This checklist is for general consultation only. It is not intended to replace the guidelines and instructions of your flooring manufacturer.

Contact Information
Call: toll-free: 1 888 565 2267
Fax: toll-free: 1 888 565 2228
Email: info@ultra-fin.com
(office hours: 7:00 - 4:00 PST)

ULTRA-FIN.COM **ULTRA-FIN INC.**

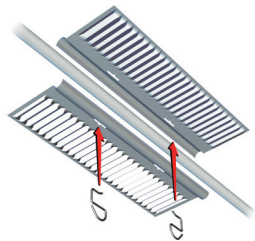
Hanging The Tubing With Snake Hangers



Snake Hanger Placement

Attaching Ultra-Fins

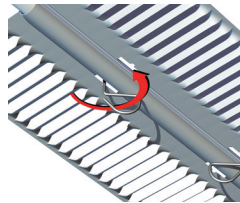
Attaching the Ultra-fins is easy, just follow these steps:



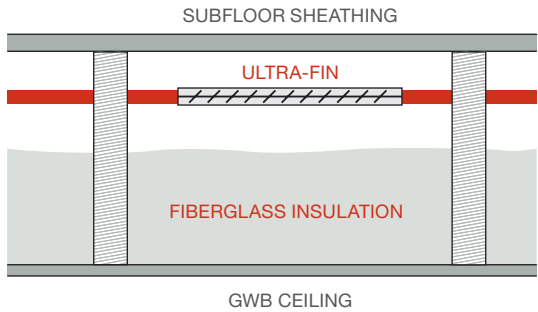
1 Lap two Ultra-Fins over a section of tubing and insert two TurnKeys.

Fasten the Ultra-Fins together by twisting both TurnKeys 90°.

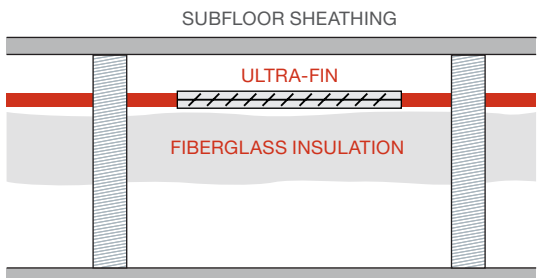
2



You Must Always Have A Minimum 2" Air Space Around The Ultra-Fins



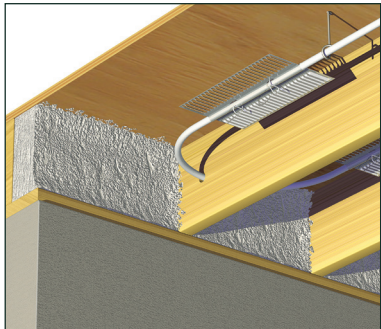
Right Way



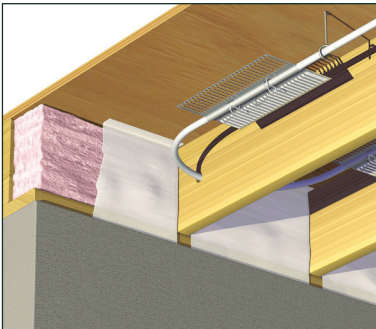
Wrong Way



R-12 fiberglass insulation

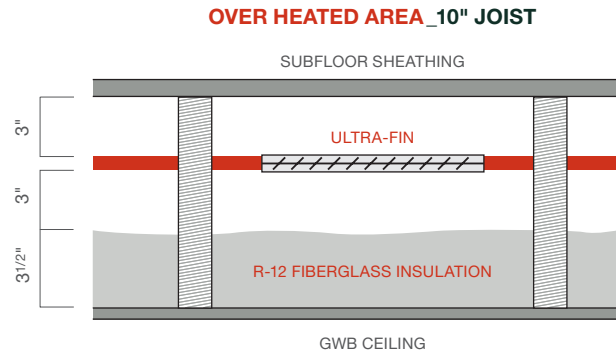


Spray foam or styrofoam insulation



R-20 fiberglass with vapor barrier

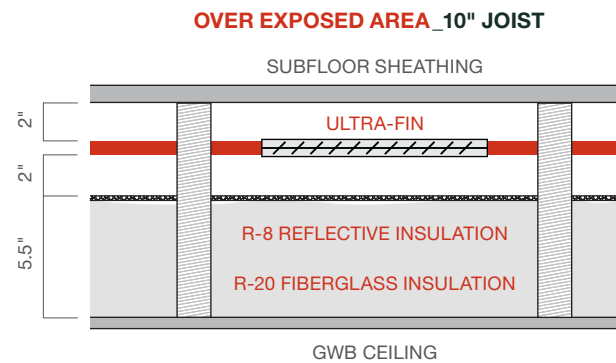
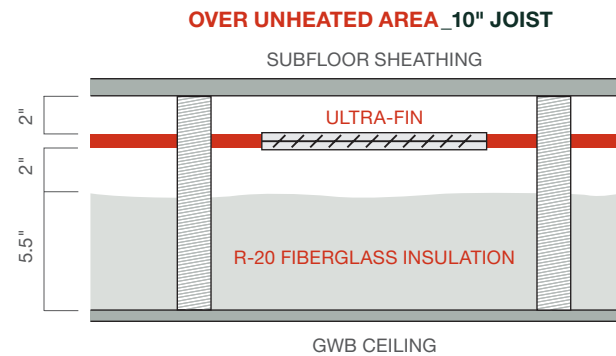
Insulating Above Heated Areas



+ NOTE +

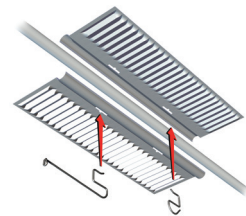
For all Ultra-Fin installations, ensure the insulation rests flush with the bottom of the joists, and that a minimum 2" air space is always maintained between the Ultra-Fins and the insulation.

Insulating Above Unheated & Exposed Areas



Ultra-Fin SideKey

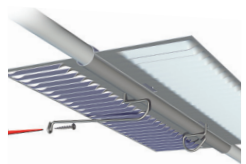
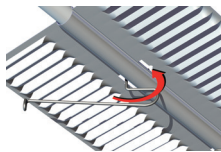
You can choose to install Ultra-Fin from above, before the floor sheathing is installed.



1 Lap two Ultra-Fins over a section of tubing and insert one SideKey.

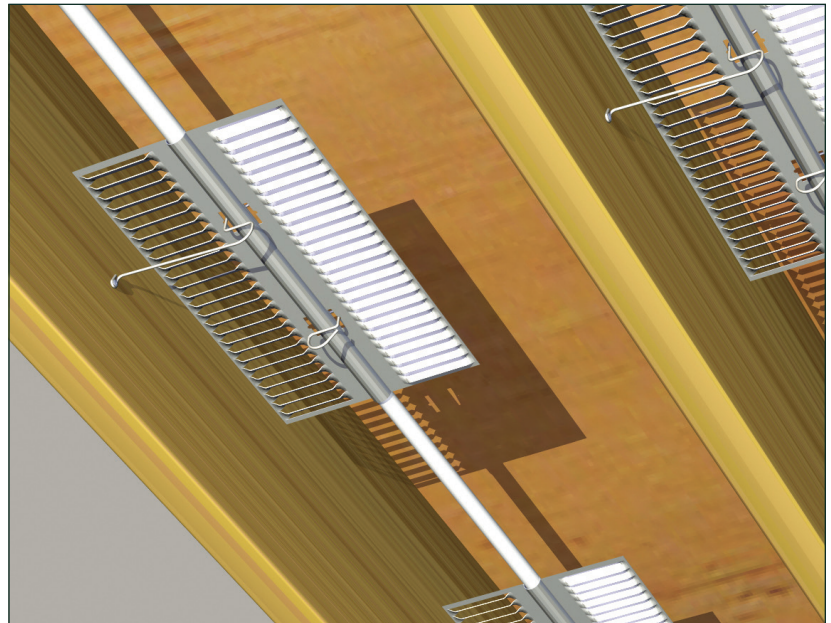
Fasten the Ultra-Fins together by twisting the SideKey 90°.

2



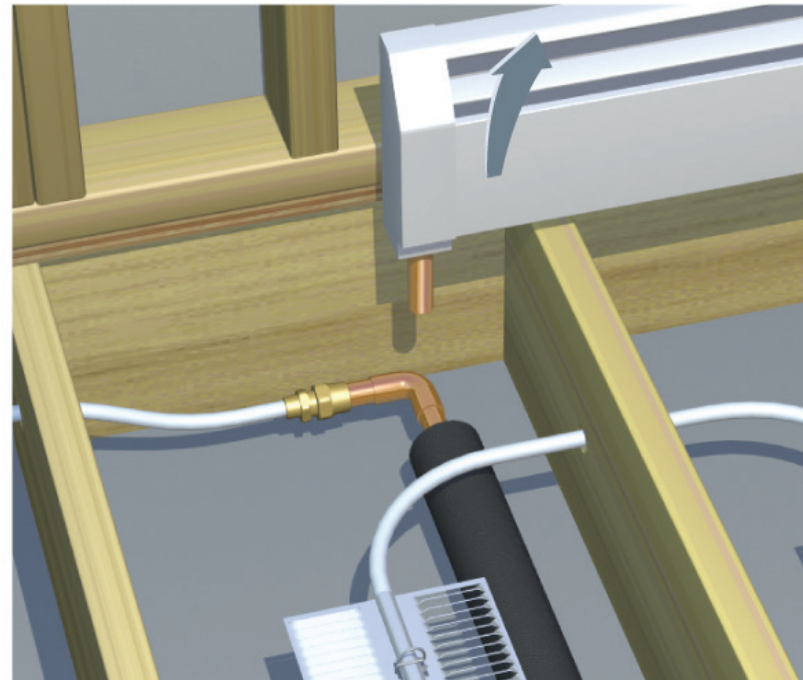
3

Done. Finish by attaching the SideKey to the joist with a fastener.

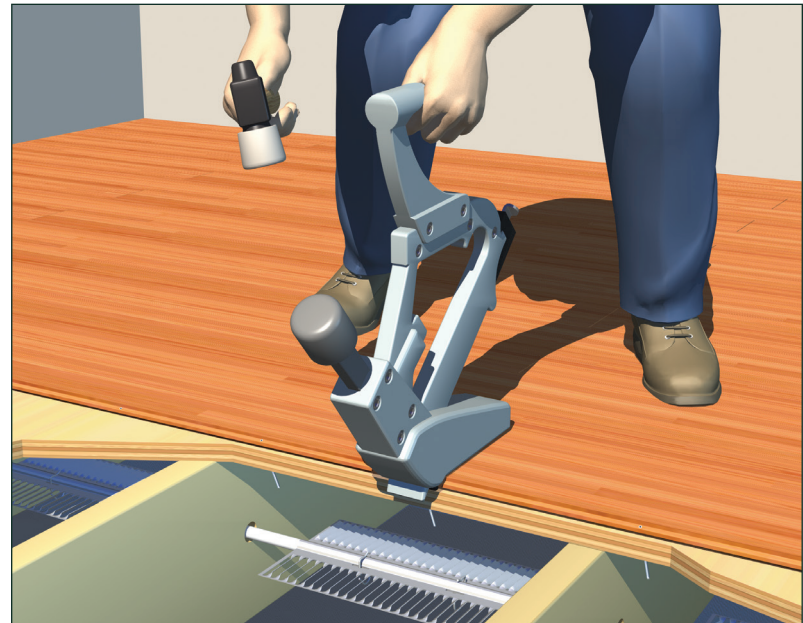


Ultra-fins installed with SideKeys

Ultra-Fin Can Operate at the Same Temperature as Removed Baseboard Radiators.



The Ultra-Fin system is typically 2" to 3" below subfloor. Safe from nails and screws.



Design a Tubing & Ultra-Fin Layout

A. Calculate the Number of Heating Zones

Look at the overall square footage of the home and the total number of rooms. How many rooms does the home have? With the exception of small interior spaces such as hallways and powder rooms, this is the number of heating zones you will want to install.

B. Sketch the Floor Plan

Sketch the floor plan and mark out the heating zones you intend to install, complete with length and width measurements for each zone.

+ NOTE +
Ultra-Fin highly recommends having separate heating zones (tubing circuits) for each room in the house.

C. Measure the Joist Spacing

The joist spacing in the floor system will usually be 12", 16" or 19". In rare instances, it could be 24". When you have determined the joist spacing, you are ready to calculate the tubing spacing for each zone.

Heat-Loss and Material Calculation

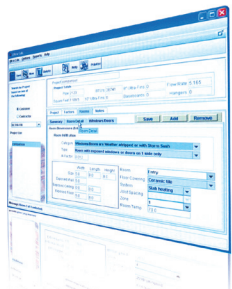
When installing an Ultra-Fin system, you need an installation layout that fits the home and the surrounding climate. Use Ultra-Fin's Ultra-Calc software to calculate the BTU's and materials required for your installation.You need the following information:

- The type of heat source your system will use (e.g. boiler, heat pump, etc).
- The anticipated operating temperature of your heat source.
- The average mean temperature for your area or location (referred to as **design temperature** in the Ultra-Calc program; click the "DESIGN TEMP" tab).
- The length and width of each room in the home.
- The ceiling heights of each room.
- The size and R-factor of every window, and whether or not they are single or double-paned.
- The R-factor of the insulation in the walls and ceilings (or at least the insulation type and thickness).

Enter these numbers into the Ultra-Calc program on your computer. Ultra-Calc will tell you:

- Tubing and Ultra-Fin material and spacing requirements.
- BTU requirements for the boiler/hot water source.

You can download the Ultra-Calc program for free on our website www.ultra-fin.com



Tubing Selection

Ultra-Fin is typically designed and installed with 1/2" tubing (5/8" O.D.). Larger diameter tubing may be used up to 3/4" (7/8" O.D.) with larger sized turnkeys specified.

If you plan to use tubing larger than 1/2" (5/8" O.D.), please refer to our Approved Tubing List for reference. The Approved Tubing List is located in the installation section @ www.ultra-fin.com

Caution!
Do not use tubing with an EVOH barrier on the exterior of the tubing.

However, tubing manufactured with a polyethylene layer extruded over the EVOH oxygen barrier is approved.

Approved Tubing for use with Ultra-Fin

Using a tubing brand from our Approved Tubing List will ensure a silent interface between the pex tubing when attached or crossing wood joist.

Installing other types of tubing may create a slight ticking noise as the tubing expands during operation. This noise is created by the outer layer of EVOH barrier when it is in direct contact with wood. To design a silent heating system, be sure to install Ultra-Fin with approved tubing only.

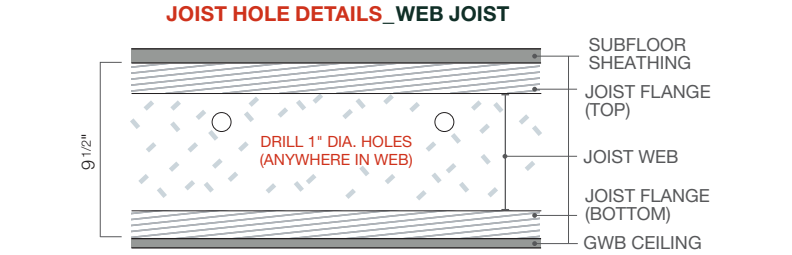
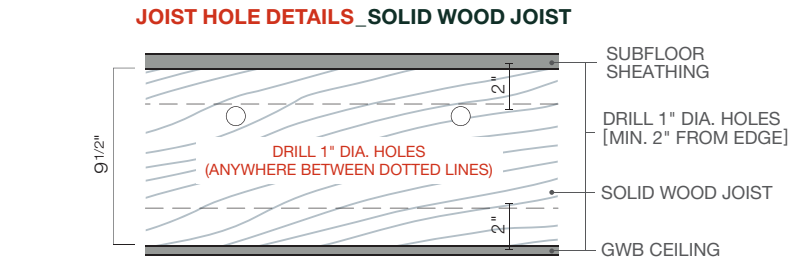
Please refer to our Approved Tubing List located in the installation section @ www.ultra-fin.com



Drilling Joists

For standard installation, joists should be drilled 3" below floor sheathing, spaced according to the calculations you made. However, there are some exceptions to this rule:

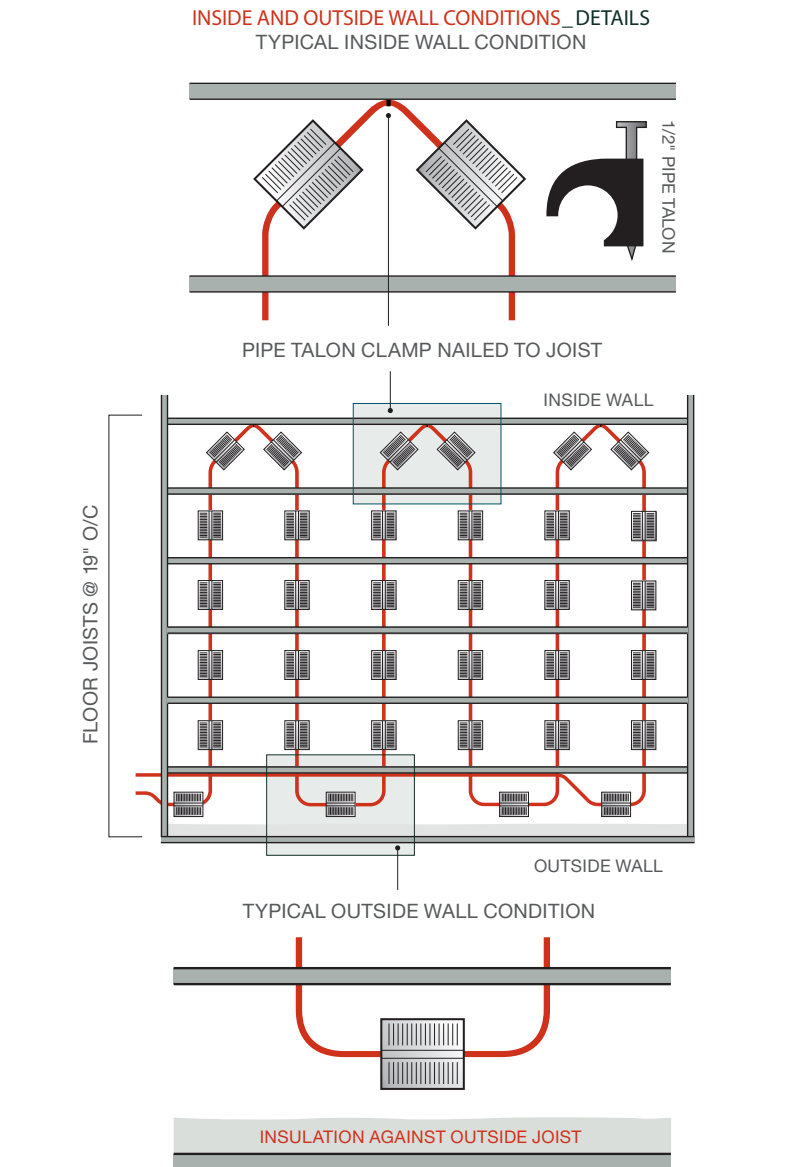
- When the joists are manufactured "truss joists," refer to the joist manufacturer's instructions regarding drilling in the joist web before automatically drilling 3" below sheathing.
- When the joists are 8" or less in depth, you may still drill 3" below floor sheathing, but you must use a thinner, special insulation product.



Pulling Tubing

If you choose to drill the joists and run the tubing through the joists, use the following procedure to pull the tubing through the holes:

- For each heating zone, feed one continuous length of tubing through the holes and back to the supply/return manifold.
- On turns against outside walls, bend tubing into a flat D-shape so that it can take one Ultra-Fin. Always allow 10" of straight tubing on the D-bend.
- On turns against inside walls, bend the tubing into a V-shape and clamp it to the side of the box joist, so it can take two Ultra-Fins. Make sure you allow 10" of straight tubing on each side of the V-bend.
- Connect the ends of the tubing circuit to the supply/return manifold.
- Test circuit with water under pressure.



+ INSTALLATION TIP +
You can save time pulling tubing by starting to pull your coil from the middle of each zone/room.

When you have finished pulling the tubing through one half of the zone and back to the supply/return manifold, measure the length of tubing you need to complete the remaining half of the zone and its return run to the manifold.

Roll that length off the tubing coil and cut it, allowing some extra length to be safe. (See diagram below)

